

AMENDMENTS – IN THE SPECIFICATION

Please amend the specification as follows.

1. Replace the first paragraph on Page 1 with the following amended paragraph.

This application is related to U.S. Provisional Patent Application Nos. 60/180,036, entitled “Match Blur System and Method, filed on February 3, 2000. This application is related to U.S. Provisional Patent Application Nos. 60/180035[[_____]], entitled “Digital Imaging With Sheep and Shepherd Artifacts” filed on February 3, 2000; 60/180030[[_____]], entitled “Reducing Streaks in Scanning” filed on February 3, 2000; and 60/180031 [[_____]], entitled “Pyramiding and Digital Imaging System and Method[[,]]” filed on February 3, 2000, each of the same inventor hereof, and filed concurrently herewith, and those respective applications are incorporated herein. This application is also related to U.S. Patent Application Nos. 09/255,401, entitled “Parametric Image Stitching”, filed on February 22, 1999, and 09/247,264, entitled “Image Block Windowed Blending”, filed on February 10, 1999, each of the same inventor hereof and incorporated herein. This application is also related to U.S. Provisional Patent Application No. 60/180028[[_____]], entitled “Method to Remove Magenta Stain From Digital Images” filed on February 3, 2000, assigned to the same assignee hereof, filed concurrently herewith, and incorporated herein.

2. Replace the paragraph beginning at Line 25 on Page 7 with the following amended paragraph.

Referring to FIG. 4, several artifacts 400 are employed in the blurring operation 300 of FIG. 3 according to embodiments of the present invention. In FIG. 4, a representative sheep artifact 402, like the sheep artifact 202 of FIG. 2 for the color red, is illustrated in an enlarged and partial view format. The sheep artifact 402 includes a window 404 superimposed on the artifact 402 at a particular spatial location. Shepherd artifacts ~~410, 420, 430~~ 412, 422, 432

corresponding to the sheep artifact 402 are also illustrated in similar enlarged and partial format. Windows 414, 424, 434 are each spatially located in the respective shepherd artifacts 412, 422, 432 at the particular location of the shepherd corresponding to the particular location of the sheep.

3. Replace the paragraph beginning at Line 5 on Page 8 with the following amended paragraph.

Each window 404, 414, 424, 434 has at its centrum a corresponding index 406, 416, 426, 436, respectively. Each window 404, 414, 424, 434 is for purposes of performing calculations, sub-divided into a number of small squares or other shapes (e.g., squares 408) of spatial area within the respective window 404, 414, 424, 434, for example, 64 squares. The index 406, 416, 426, 436 identifies the particular window, 404, 414, 424, 434, and also identifies the small squares (e.g., square 408) of spatial area within the window 404 that is the centrum. Each artifact 402, 412, 422, 432 is similarly divided into the respective windows over the entire area of the artifact 402, 412, 422, 432, and each window over the entire area of the respective artifact 402, ~~[[312]]~~412, 422, 432 is similarly divided into the respective squares over the entire area of the respective window. It is notable that there are corresponding windows and squares within the windows as to spatial location, for each of the artifacts 402, 412, 422, 432. The plurality of artifacts, windows over the area of the artifacts, and squares over the area of each window are used in performing a blur hereinafter described.

4. Replace the paragraph beginning at Line 11 on Page 8 with the following amended paragraph.

If, on the other hand, the sheep artifact in the method 600 is one that tends to be overly expressed, such as the green sheep artifact, then the method 600 proceeds to a step 620 or 622. For each square of each window of the sheep artifact, if the value for ~~[[the]]~~a particular square is less than the value at the centrum of the square of the sheep artifact, then the step 620 is performed. Otherwise, the step 622 is performed. In the step 620, if the value for ~~[[the]]~~a particular square of the sheep artifact is greater than zero, then the weight for the square is multiplied by a factor, such as 0.75. If the value for the particular square is less than zero, then

the weight for the particular square is multiplied by another factor, for example, 0.20. The factor is empirically determined for the application. In a step 624, the weight as multiplied by the applicable factor from the step 620 is employed to derive a new value which is set and saved in the step 624 for each window of the sheep artifact. The new value, in this instance, is calculated as the product sum of all squares for the sheep artifact times the weight multiplied by the applicable factor from the step 620, divided by the weight multiplied by such applicable factor from the step 620.

5. Replace the last paragraph on Page 9 with the following amended paragraph.

In a step 604, an absolute value of a difference determination between a value of the center square (i.e., index) of a window of the shepherd artifact and another square of the window is determined for each square of each window, whereby such difference determinations of each window represents a sequence of difference determinations for that particular window. In a step 606, the absolute value of each[[the]] difference from[[for each]] the sequence of difference determinations of each window is then weighted by multiplying the absolute value of each difference from the sequence of difference determinations of each window (i.e. each absolute [[the]] difference value) by the weighting factor “k” from the step 602, thereby producing a weighted difference value corresponding to each absolute difference value. The absolute value determination and weighting is performed over the entirety of each shepherd artifact, that is, square-by-square, through window-by-window, over the entire artifact.

6. Replace the paragraph beginning at Line 1 on Page 10 with the following amended paragraph.

Each[[The]] weighted difference value[[s]] from the step 606 is[[are]] then [[each]] limited by the product of one over a threshold factor. The threshold factor is determined empirically and can vary for the particular application and desired result. In every event, the threshold factor is chosen to yield a value (i.e., the original product referred to below) between

one and zero when each[[the]] weighted difference value[[s are]] is multiplied by one over the threshold factor.

7. Replace the paragraph beginning at Line 6 on Page 10 with the following amended paragraph.

In a step 610, a new ~~weighted~~ value of either zero or one is derived for each weighted difference value by setting the new value at 0.0 when the original product of the weighted difference value times one over threshold factor is greater than one and at 1.0 when the original product of the weighted difference value times one over threshold factor is less than one. This clamps each[[the]] weighted difference value to between one or[[and]] zero, as illustrated by a step 612, thereby producing clamped weighted difference values.

8. Replace the paragraph beginning at Line 10 on Page 10 with the following amended paragraph.

~~All of the~~The clamped weighted difference values, after clamping in step 612, are summed in a step 614 ~~for each respective square~~. For the representative sheep artifact, the squares of the sheep artifact at the corresponding locations are also summed. A product sum is calculated for each square of the shepherd artifact, which product is sum of all squares of the sheep artifact at the square multiplied times the clamped and summed weight for [[the]] a particular square of the shepherd artifact. The clamped weight values from the step 612 are saved in a step 616 for each square of the shepherd artifact, such as in an array. The saved clamped weighted difference values from the step 616 are later used only in the event of performing the method 600 with the sheep artifact that would otherwise be overly expressed in the result, such as the green sheep artifact that leads to magenta mottle if the method 600 is not followed in the blur.

9. Replace the paragraph beginning at Line 19 on Page 10 with the following amended paragraph.

In effect, the weighting and clamping of the foregoing steps of the method 600 serves to cause the weight for each window saved in the step 616, to approach the value of either 0 or 1 for the window. Because the weight is either 0 or 1, the sum of the weights for each square will only become large if the absolute value of the difference of the respective squares of the shepherd artifacts approach the value zero. That is, the sum of the weights is large only if the shepherd artifacts agree at the particular square of the shepherd artifact and, thus, at the particular window. If a feature exists in one shepherd artifact, but not ~~another~~the other shepherd artifact for the calculation, then the feature will be less emphasized in the resulting blur from the method 600 than will other features appearing strongly in both shepherd artifacts. This is the effect of the method 600, as just described, for all sheep artifacts; provided any sheep artifact, such as the green sheep artifact of an image, that tends to be overly expressed in the result, for example, as magenta mottle in the case of the green sheep artifact, is further manipulated to limit the expression, as now described.